



# PIER Energy-Related Environmental Research

Environmental Impacts of Energy Generation, Distribution and Use

## Wildlife Interactions with Utility Facilities

**Contract #:** 500-97-010-08

**Contractor and Major Subcontractors:** Pacific Gas and Electric with Colson and Associates

**Contract Amount:** \$130,000

**Contractor Project Manager:** Mark Dedon

**Commission Contract Manager:** Rick York

### Project Description

The purpose of this project was to analyze products that reduce or prevent wildlife interactions, and resulting electrocutions and power outages, with powerlines and power facilities. Distribution line add-on insulation and perch deterrent products that were added to distribution line power poles were analyzed to evaluate their durability and effectiveness.

This research project also evaluated the applicability and effectiveness of a geographic information system (GIS) model that would allow Pacific Gas and Electric (PG&E) to plan future electrical facility upgrades to reduce wildlife electrocutions and associated power outages. The GIS model is designed so it can also help predict “high risk” areas, so that new distribution lines and existing distribution line upgrades can be designed to minimize wildlife electrocution-related power outages. The GIS model was also developed in response to a 1994 settlement agreement between PG&E and the U. S. Fish and Wildlife service that arose after citations were issued to PG&E for the electrocutions of several Swainson’s hawks—a State-protected species. Birds and other animals are the fourth leading cause of electric distribution outages in the PG&E system.

### PIER Program Objectives and Anticipated Benefits for California

This project offers numerous benefits and meets the following PIER program objectives:

- **Improving environmental and public health costs/risk of California’s electricity** by improving current systems and technologies that prevent bird electrocutions caused by powerlines.
- **Improving the reliability/quality of California’s electricity** by reducing bird-related power outages.

### Results

#### Wildlife-Protective Devices

**Objective:** To better understand the expected life span of wildlife-protective devices in the field.

**Outcomes:** Based on the limited sample of protective devices observed, approximately 15 percent showed a degree of degradation that is likely to reduce their performance.

Approximately 65 percent of the poles observed had wildlife protective devices that were not installed according to manufacturer recommendations or PG&E Engineering Standards. Installations were incomplete or improperly executed.

Although PG&E cannot say that improper or incomplete installation practices or degrading devices are the reason that wildlife-caused outages continue to trend up in most PG&E divisions, it is likely they result in a risk for future outages.

### Geographical Information System (GIS)

Objective: To implement the GIS developed in the pilot study throughout PG&E's service territory.

Outcome: The GIS system is now being used for a selected PG&E service territory.

Objective: Encourage use of the GIS by planners to better design new circuits in areas vulnerable to wildlife-caused outages.

Outcomes: The project benefits from the use of PG&E's Intranet Map Server with centralized data. PG&E distribution planners are gradually discovering its usefulness in the design of new circuits and upgrades to existing circuits.

Currently, GIS training is in high demand and user feedback is extremely positive.

Objective: Develop a risk model that indicates "high risk" areas where birds are more vulnerable to electrocution within PG&E's service area.

Outcome: The GIS provides the required risk model to comply with the PG&E/U.S. Fish and Wildlife Service settlement agreement.

Objective: Demonstrate that a GIS can be created to plan and build a reliable electrical system that is less likely to have wildlife-related power outages.

Outcome: The PG&E project manager is available to demonstrate the GIS capabilities, discuss how the GIS was created and other sources of GIS/map information, and advise others how to design a similar system.

### **Final Report**

The final report on the results of this work, *Reducing Wildlife Interactions with Electrical Distribution Facilities* (600-00-30), is available on the California Energy Commission website, at [www.energy.ca.gov/reports/2002-01-10\\_600-00-030.PDF](http://www.energy.ca.gov/reports/2002-01-10_600-00-030.PDF).

### **Contact**

Rick York • 916-654-3945